THE UNITED STATES PUBLIC LAND SURVEY SYSTEM IN IOWA

Iowa Chronology to Statehood

It is the purpose of this section to incorporate important dates and events in the transition of the land area now known as Iowa from formal claim by a European power to statehood. It is a recitation of historical fact deemed helpful to furnish a time line for other dates and events discussed herein.

1682 Réné-Robert Cavelier, Sieur de la Salle, claimed the entire Mississippi River watershed for France, naming it Louisiana in honor of King Louis XIV.

1762 France ceded the western half of the Mississippi valley and Orleans to Spain as compensation for aiding France against Great Britain.

1763 The Treaty of Paris of 1763 ended the Seven Years' War in Europe pitting Austria, Russia and France against Prussia with Great Britain aiding the Prussians. Spain joined on the side of France in 1762. In North America, the French and Indian War between France and Great Britain had been smoldering since Washington's defeat at Great Meadows in western Pennsylvania in 1754. Great Britain succeeded in defeating the French in North America by 1760. In the treaty, France ceded to Great Britain all her possessions in North America east of the Mississippi and Orleans except for two small islands in the Gulf of St. Lawrence, and Spain ceded to Great Britain the colony of Florida in exchange for Cuba.

1775 to 1783 – The American Revolution.

1788 National sovereignty established.

1800 Napoleon Bonaparte induced Spain to cede back the Louisiana Territory to France.

1803 Napoleon, recognizing his inability to hold Louisiana against the British, sold the entire claim (Louisiana Purchase) to a surprised United States. Actually the Spanish remained in possession of the territory until 1804. The French flag replaced the Spanish flag over New Orleans from November 30, 1803, to December 20, 1803, at which time it was replaced by the United States flag. At Saint Louis the flag of Spain gave way to the French flag on March 9, 1804, to be replaced in turn by the United States flag on March 10, 1804.

1804 Congress divided the Louisiana Purchase at 33 degrees north latitude into the southern Territory of Orleans and the north District of Louisiana. The District of Louisiana was attached to the Territory of Indiana.

1805 The Louisiana Territory was formed which included Iowa.

1812 Louisiana became a state. The remaining Louisiana Territory was renamed Missouri Territory.

1812 to 1814 – The War of 1812 against Great Britain demonstrated the United States' determination to survive as an independent nation. The 1814 Treaty of Ghent simply ended this war, exchanging no territory and confirming no rights.

1821 Missouri became a state. Iowa became part of the unorganized territory of the United States.

1834 Iowa became part of Michigan Territory.

1836 Iowa became part of Wisconsin Territory.

1838 Iowa Territory was formed. It included Iowa plus the land between the Mississippi and Missouri rivers up to 49 degrees north latitude, the northern boundary of the United States agreed on with Great Britain in 1818.

1840 Residents of the Iowa Territory voted against statehood.

1842 Residents of the Iowa Territory again voted against statehood.

1844 to 1845 – Residents of the Iowa Territory voted for statehood. A Constitutional Convention prepared the proposed Constitution of 1844 which was forwarded to Congress. Congress trimmed the proposed borders of the state to about two/thirds the present size. The territory residents rejected the amended borders.

1846 A Constitutional Convention of 1846 patched up the Constitution of 1844 and agreed on compromised borders of 43 degrees 30 minutes north latitude on the north and the Missouri and Big Sioux rivers on the west. The voters accepted the Constitution of 1846 and so did Congress. Iowa became the 29th state on December 28, 1846.

Iowa Surveyors General

Except for the Half-Breed Reservation in Lee County, and a few surveys in far southwestern Iowa administered by the Surveyor General of Illinois and Missouri, the public land surveys in Iowa were administered by the following Surveyors General:

Robert T. Lytle, Surveyor General of Ohio, Indiana and Michigan, appointed April 23, 1835, office at Cincinnati, Ohio

Ezekiel S. Haines, Surveyor General of Ohio, Indiana and Michigan, appointed June 6, 1838, office at Cincinnati, Ohio

Albert G. Ellis, Surveyor General of Wisconsin and Iowa, appointed June 28, 1838, opened office at Dubuque, Iowa February 1839

George W. Jones, Surveyor General of Wisconsin and Iowa, appointed February 4, 1840, office at Dubuque, Iowa

James Wilson, Surveyor General of Wisconsin and Iowa, appointed April 24, 1841, office at Dubuque, Iowa

George W. Jones, Surveyor General of Wisconsin and Iowa, appointed May 9, 1845, office at Dubuque, Iowa

Caleb H. Booth, Surveyor General of Wisconsin and Iowa, appointed January 12, 1849, office at Dubuque, Iowa

George B. Sargent, Surveyor General of Wisconsin and Iowa, appointed March 24, 1851, office at Dubuque, Iowa

Warner Lewis, Surveyor General of Wisconsin and Iowa, appointed April 23, 1853, office at Dubuque, Iowa

Thomas J. Townsend, Surveyor General of Wisconsin and Iowa, appointed May 6, 1861, office at Dubuque, Iowa

Henry A. Wiltse, Surveyor General of Wisconsin and Iowa, appointed January 29, 1863, office at Dubuque, Iowa until it was closed on June 30, 1866, and any remaining administrative duties were transferred to the Surveyor General of Nebraska and Iowa with office at Plattsmouth, Nebraska

U.S. Public Land Survey System Instructions In Iowa

Prior to the existence of the standardized manuals, sets of instructions were issued by the various Surveyors General. The most complete and earliest of these in the Northwest Territories are Edward Tiffin's (the Tiffin Instructions of 1815; Mansfield had probably issued general instructions prior to this). It is generally assumed that each Deputy Surveyor used the latest set of instructions in the particular jurisdiction they were working in. Using the Dodds Iowa book, C. Albert White's *A History of the Rectangular Survey System*, and *A Collection of Original Instructions to Surveyors of the Public Lands 1815-1881,* Roy Minnick, ed., Landmark Enterprises, Rancho Cordova, CA (GITC America Books, www.profsurv.com), the development of general instructions affecting the subdivision of townships in the U.S. Rectangular Survey System in Iowa during the period 1831-1855 may be traced out as follows: See these references to obtain the full instructions.

INSTRUCTIONS for Deputy Surveyors
by E. Tiffin
Surveyor General of Ohio, Michigan,
Illinois, Indiana and Missouri
1815

(Note that these instructions anticipate closing or double corners on both the north and west boundaries of townships.)

Instructions for Subdividing Townships

2. also in running to the western boundary, unless your sectional lines fall in with the posts established there for the corners of sections in the adjacent townships, you must set posts and mark bearing trees at the points of intersection of your line with the town boundaries, and take the distances of your corners from the corners of the sections of the adjacent townships, and note that and the side on which it varies in chains, or links or both.

3. The sections must be made to close by running a random line from one corner to another except on the north and west ranges of sections, and the true line between them is to be established by means of offsets.

Letter of instructions to the Surveyors General from Elijah Hayward
dated 28 July 1831 to Mississippi
dated 6 July 1832 to Arkansas
dated 23 September 1831 to rest

These instructions from Elijah Haywood, Commissioner of the General Land Office 1830-1835, were directed to the Surveyors General with the idea being that each individual Surveyor General would prepare his own instructions for the Deputy Surveyors under contract to him. They don't go into detail on field procedures for township subdivision. At this time, General Land Office surveys would be in progress under the following Surveyors General:

Surveyor General of Alabama
Surveyor General of Illinois and Missouri
Surveyor General of Arkansas (opened office June 1832)
Surveyor General of Florida
Surveyor General of Ohio, Indiana and Michigan
Surveyor General of Louisiana
Surveyor General of Mississippi

On the subdivision of townships, Hayward said:

The act of 11th February, 1805, entitled, "An Act concerning the mode of surveying the public lands of the United States," prescribes general regulations for dividing townships into sections, and subdividing such sections into half sections and quarter sections. The following is a summary of those regulations:

The lands are to be laid off in townships of precisely six miles square, by lines running due North and South, and East and West. On each of those lines, precisely at the distance of one mile apart, corners are to be established for sectional lines. Parallel lines are to be run through the township each way, from each sectional corner to the corresponding sectional corner on the opposite side of the township; on each of which lines sectional corners are to be established, at the distance of one mile apart; which process will divide the township into thirty-six sections. In running the exterior township lines, and also the interior sectional lines, intermediate half-mile posts or corners (precisely equidistant between the corners of the sections) are to be established, as the boundaries of quarter sections.

GENERAL INSTRUCTIONS TO HIS DEPUTIES;
BY THE SURVEYOR GENERAL OF THE UNITED STATES, FOR THE STATES OF
OHIO AND INDIANA, AND THE TERRITORY OF MICHIGAN
CINCINNATI:
JOHN H. WOOD, PRINTER
1833

(Note that Iowa was part of Michigan Territory from 1834 to 1836, part of Wisconsin Territory from 1836 to 1838, and part of Iowa Territory from 1838 until statehood on December 28, 1846. Note that these instructions anticipate closing or double corners on the north boundaries of townships but require random and corrected true lines when closing on the west boundaries of townships. The Dodds Iowa book does not contain these instructions.)

Of Subdividing Townships Into Sections

3. In closing out the section lines to the north boundary of the township, unless the section lines intersect that boundary at the section corners thereon established for the adjoining townships, you must set a post, and take bearing trees at each intersection, and measure and note the distance to the posts previously set for the adjoining township, and on which side of such posts. But whenever the closing lines of the sections, intersect at the posts on the north boundary, such posts become common for the sections on both sides of the town boundary.

7. In this manner proceed with the survey of each successive section in the first tier, until you arrive at the north boundary of the township, which you will reach in running up the line between sections 1 and 2. On this line, the distance at which the north boundary is intersected, is to be carefully noted. If you should not intersect at the post established for corner to sections 35 and 36 in the adjoining township, you must carefully measure and note in your Field Book, the distance of the point of intersection from said post, shewlng whether you fell east or west thereof: and at that point, you will set a post and establish a corner for sections 1 and 2,

8. In like manner proceed with the survey of each successive tier of sections, until the fifth, or last entire tier is run up. From the section corners on this tier, you will run random lines for the corresponding corners established on the western boundary of the township, and correct back on true lines from these corners on the west boundary.

GENERAL INSTRUCTIONS TO DEPUTY SURVEYORS

General Surveying Instructions to Deputy Surveyors in Illinois and Missouri received with letter for U.S. Surveyor General dated January 9, 1834

(The Dodds Iowa book contains these instructions applicable to Illinois and Missouri. Portions of Townships 67 and 68 North from Range 34 West on west to the Missouri River were surveyed as an extension of Missouri surveys under 1845 and 1846 contracts, and these instructions are probably applicable to those surveys. These 1834 Missouri instructions anticipate closing or double corners on both the north and west boundaries of townships. The Dodds Iowa book also contains a set of 1843 instructions applicable to Arkansas; and a set of 1850 instructions applicable to Ohio, Indiana and Michigan.)

Each north and south Section line must be made one mile in measure by the chain, except those which close to the north boundary of the Township, so that the excess or deficiency will be thrown into the northern Range of quarter Sections, viz: In running north between Sections 1 and 2, at 40.00 chains, establish the quarter Section corner and note the distance at which you intersect the north boundary of the Township; and also, the distance you fall east or west of the corresponding Section corner for the Township to the north; and, at said intersection, establish a corner for the Sections between which you are surveying.

The east and west lines, in the west Range of Sections, will be run west on true lines; the quarter Section corner will be established at 40.00 chains; the corners for the proper Sections will be established at the intersection with the Range line, and the distance which it intersects north or south of the corresponding Section corner west of the line, will be noted in the Field Book.

GENERAL INSTRUCTIONS
OFFICE OF THE SURVEYOR GENERAL
OF WISCONSIN AND IOWA

Dubuque, May 28, 1846

(These instructions require random and corrected true lines when closing on the west and north boundaries of townships; they also include a tolerance of one hundred links for the sides of regular sections.)

Subdivision
Length of North and South and East and West Lines, and
Where to Establish Quarter Section Posts

1. Every north and south section line, except those terminating in the north boundary, are to be one mile in length. The east and west section lines, except those terminating in the west boundary, are to be within one hundred links of eighty chains in length; and the north and south boundaries of any section, except in the extreme western tier, are to be within one hundred links of equal length.

Method of Subdividing; Random, Corrected and True Line,
and Diagram

6. In this manner proceed with the survey of each successive section in the first tier, until you arrive at the north boundary of the township, which you will reach in running up a random line between sections 1 and 2. If this line should not intersect at the post established for corner to sections 1, 2, 35 and 36 upon the township line, you will note the distance that you fall east or west of the same, from which distance you will calculate a course that will run a true line south to the corner from which your random started.

8. In like manner proceed with the survey of each successive tier of sections, until you arrive at the fifth or last tier. From each section corner which you establish upon this tier, you are to run random lines for the corresponding corners established upon the range line forming the western boundary of your township, and in returning, establish the true line as before directed.

10. In closing upon a correction line, you are to establish a section corner at the point of your intersection therewith, stating the true distance of such intersection from the nearest corner thereon.

GENERAL INSTRUCTIONS.
OFFICE OF THE SURVEYOR GENERAL
OF WISCONSIN AND IOWA
1851

(These instructions are essentially a reissue of the 1846 instructions from the Office of the Surveyor General of Wisconsin and Iowa insofar as township subdivision is concerned.)

INSTRUCTIONS TO THE
SURVEYOR GENERAL OF OREGON
BEING A MANUAL FOR FIELD OPERATIONS
1851

INSTRUCTIONS TO THE
SURVEYORS GENERAL OF PUBLIC LANDS
OF THE UNITED STATES
FOR THOSE SURVEYING DISTRICTS ESTABLISHED
IN AND SINCE THE YEAR 1850;
CONTAINING, ALSO,
A MANUAL OF INSTRUCTIONS TO
REGULATE THE FIELD OPERATIONS OF
DEPUTY SURVEYORS,
ILLUSTRATED BY DIAGRAMS
1855

The first *Manual of Surveying Instructions* was officially issued in 1851. It was written to the Surveyor General of Public Lands in Oregon, and is often called the Oregon Manual. George B. Sargent, Surveyor General of Wisconsin and Iowa 1851-1853, received a supply in April 1851, along with instructions to run his range lines north to intersections with the correction lines and establish closing corners according to the Manual.

The *1855 Manual of Surveying Instructions* was an expansion of the *Oregon Manual of 1851*, both prepared by John M. Moore, Principal Clerk of Surveys. It established the present system of base lines, principal meridians, spacing of standard parallels, and guide meridians. The 1851 and 1855 manuals did not change the field procedures for township subdivision that were given in the 1846 General Instructions from the Office of the Surveyor General of Wisconsin and Iowa. A Federal Act of May 30, 1862, made the *1855 Manual of Surveying Instructions* a part of every surveying contract.

History of Sectionalized Surveys in Iowa

The initial point of the Fifth Principal Meridian was established in 1815. From White: "On October 27, 1815, Deputy Surveyor Joseph C. Brown began the survey of the base line at the confluence of the Mississippi and St. Francis Rivers

and ran it due west. On the same date, Prospect C. Robbins began the survey of the meridian at the confluence of the Arkansas and Mississippi Rivers and ran it due north. Robbins intersected the base line in the 58th mile, approximately 26 miles west of the Mississippi River, on November 10, 1815. There he established the initial point of the Fifth Principal Meridian, which controls the rectangular surveys in all of Arkansas, Missouri, Iowa, North Dakota, most of Minnesota, and half of South Dakota." Robbins continued north to the south bank of the Missouri River, 55 chains 26 links north of the southeast corner Section 25, Township 25 North, Range 1 West of the Fifth Principal Meridian (C. Albert White. *Initial Points of the Rectangular Survey System*. Denver: Professional Land Surveyors of Colorado, Inc. 1996. 121).

The first public land surveys in Iowa were carried out by Jenifer T. Sprigg, in 1832 and 1833, under contract to William Clark, Superintendent of Indian Affairs, War Department, in subdividing the Half-Breed Reservation, Lee County. The Half-Breed Reservation consisted of the small part of Iowa between the Des Moines and Mississippi rivers cut off by the eastward extension of the Sullivan line (The old Indian boundary surveyed out by John C. Sullivan in 1816 in consequence of an 1808 treaty with the Osage tribe). The United States acquired title to the Half-Breed Reservation through two August 4, 1824, treaties with the Confederated Sauk and Fox tribes and the Ioway Tribe. By Act of June 30, 1834, Congress relinquished all land title in the Half-Breed Reservation and stated the same is vested in the half-breeds of the Sauk and Fox Indian Tribes. Said half-breeds were also granted full power and authority to transfer their portions according to the laws of Missouri.

Sprigg's field notes may be examined on microfilm, filmed by the National Archives of the United States on or about January 1979, in the library records in the State Historical Building, 600 East Locust, Des Moines. They appear to be very good notes, carefully written in a good hand and quite readable except where the microfilm is faint. They are quite lengthy running to some 350 pages. Sprigg picked up a lot of detail, had both township exterior and interior lines to run, had meanders to run along both the Mississippi and Des Moines rivers and had to extend the 1816 Sullivan Line, for the north Half-Breed Reservation boundary, between the Des Moines and Mississippi rivers. The notes indicate that he advanced his township interior lines in a rather random order and created double or closing corners on both the north and west sides of his townships. His starting point is identified as follows:

March 23_1832

> "I found the corner of Township No. 64 & 65 N of Ranges No. 5 & 6 W 5th Principal Meridian there being but one bearing tree and one or two of the figures burnt out. In order to be sure that I was under no mistake as to

the corner I run and measured East. At about 40.00 chains found a 1/4 Section corner at 79.90 chains came to the corner of Sections 5 & 6 T64N and 31 & 32 T65N R5W 5th PM. From said corner I run and measured North along the East side of Section 31 T65N R5W 5th PM at 22.00 chains to the right bank of the River Des Moines and corner of fractional sections 31 & 32 T65N R5W 5th PM.

On finding that I agreed well with those lines both as to course and distance with the compass set to a variation of 8° East, and the chain having been previously adjusted to the standard measure I therefore commenced at the corner of said Township 64 & 65 North of the base line of Ranges 5 & 6 West of the 5th Principal Meridian, and run North along the East boundary of Township 65N R6W without making any marks until I got on the North bank of the River Des Moines."

Additional surveys in Iowa didn't get underway until 1837. A spot check of some of these 1837 field notes indicated that these Deputy Surveyors all created closing corners only on the north sides of townships with three major exceptions:

1. In Township 77 North, Range 1 East, and Township 78 North, Range 1 East, Muscatine County, William A. Burt created double corners on the west side of both townships. It had to do with the following paragraph contained in his special instructions (Letter Book A: 183, 1837 from the Dodds Iowa book):

   "In closing West, to the 5th Meridian in Towns 77 & 78 Range 1 E. you must close by *true* lines, establishing in the corners on the Meridian when you intersect it; as there is jog of nearly 12 chains in the Town corners on the Mer. between these two towns and the corresponding towns in Range 1 West."

   The northwest corner of said Township 78 is on the First Correction Line where William A. Burt headed north when running out the Fifth Principal Meridian after offsetting from the west. An examination of the original township plats for either of said Township 77 or 78 indicates that the southwest corner of Township 78 (northwest corner of Township 77) is indeed 11.82 chains north of the southeast corner of Township 78, Range 1 West (northeast corner of Township 77 North, Range 1 West). From William A. Burt's field notes on the interiors of Townships 77 and 78 North, Range 1 East, the north/south jogs are as follows:

   In Township 77 North, Range 1 East

   Between sections 19 and 30 closing corner is 11.54 chains north of corner to west

Between sections 18 and 19 closing corner is 11.80 chains north of corner to west
Between sections 7 and 18 closing corner is 11.82 chains north of corner to west
Between sections 6 and 7 closing corner is 12.10 chains north of corner to west

In Township 78 North, Range 1 East
Between sections 30 and 31 closing corner is 12.97 chains north of corner to west
Between sections 19 and 30 closing corner is 13.75 chains north of corner to west
Between sections 18 and 19 closing corner is 14.00 chains north of corner to west
Between sections 7 and 18 closing corner is 14.20 chains north of corner to west
Between sections 6 and 7 closing corner is 14.25 chains north of corner to west

2. Another instance of double corners on the west side of Township 68 North, Range 33 West, Taylor County, is found in the special instructions. See letter to A Carpenter, Letter Book E: 114 which probably is dated September 1851, Dodds Iowa book page 327.

> "The East Boundary of Township No. 68, Range No. 34 was surveyed without any reference to the Township East of it; Therefore in surveying Township No. 68, Range 33 (and only this one) in closing to the West you will run due West, noting your intersection with the nearest corners in said line, and establishing the proper corners, the bearings to which must all stand in the Township you are then surveying."

The west line of Township 68 North, Range 33 West is where the Iowa Base Line offsets one township north/south. This base line was part of James Marsh's 08/01/1848 contract. Apparently John S. Sheller reran this north/south portion under a 09/06/1851 contract. The section line offsets between Ranges 33 and 34 in Township 68 are about one/half mile, and the north/south dimension of Section 1, Township 68 North, Range 34 West is about one/half mile.

3. A third exception can be found in several townships in far southwestern Iowa that were probably surveyed under 1834 Missouri instructions which anticipated closing corners on both the north and west sides of

townships. A review of the original government field notes identifies these townships where closing corners are found on both the north and west sides of townships as:

All are in Township 67 North

Range 34 West (subdivision by Lycurgus Shepard, 1845)
Range 35 West (subdivision by Thos. Monroe, 1845)
Range 36 West (subdivision by Thos. Monroe, 1845)
Range 39 West (subdivision by Warren Reed, 1845)
Range 40 West (subdivision by Warren Reed, 1845)
Range 41 West (subdivision by Geo. B. Sargent, 1846)
Range 42 West (subdivision by Geo. B. Sargent, 1846)
Range 43 West (subdivision by Geo. B. Sargent, 1846)

Township 67 North, Range 43 West is made fractional by the Missouri River but would have closing corners on its fractional north side. Township 67 North, Ranges 37 and 38 West were subdivided by Wm. Shields, 1852, and do not contain any closing corners.

It is hypothesized that:

1. Iowa townships in the Half-Breed Reservation in Lee County, have closing corners on their northern and western sides.
2. Iowa Townships 77 and 78 North, Range 1 East, Muscatine County, have closing corners on their northern and western sides.
3. Iowa Township 68 North, Range 33 West, Taylor County, has closing corners on its northern and western sides. Iowa Township 67 North, Range 33 West, Taylor County, has closing corners on its western side in accordance with special instructions to Wm. Shields. See letter to Wm. Shields, Letter Book E: 380 dated March 25, 1852, Dodds Iowa book page 334.

> "Towns 67, Range 33 is to be surveyed in precisely the same manner with this exception, that as the West Boundary of this Township was surveyed under instructions from the Office at Saint Louis, it has no reference to the present surveys, consequently you will have to notice the intersection and falling of the West tier with the corners already established."

4. Iowa Township 67 North, Ranges 34 through 36 and 39 through 42 West; Taylor, Page and Fremont Counties; surveyed under contract with the Surveyor General of Illinois and Missouri, have closing corners on their northern and western sides. Iowa Township 67 North, Range 43 West,

Fremont County, is made fractional on the west by the Missouri River and has closing corners on its northern side.

5. Sprigg's Sullivan Line extension across Lee County for the north line of the Half-Breed Reservation has closing corners on it created by surveying the area between the Iowa Base Line and the Half-Breed Reservation from north to south. The north line of the Half-Breed Reservation is not a section line.
6. The Iowa/Missouri boundary is a section line, but not a township line, westward from the Des Moines River through Range 33 West. It has closing corners on it created by surveying the area between the Iowa Base Line and the Iowa/Missouri boundary from north to south.
7. The Iowa/Missouri boundary in Range 34 West and westward to the Missouri River is not a section line. The Missouri surveys were continued northward to close on the Iowa Base Line.
8. With the exceptions of 1 through 7 above, Iowa townships subdivided under contracts dated 1837 to the early part of 1846, have closing corners on their northern sides. The Dodds Iowa Book does not list any contracts made in 1846 until October.
9. Iowa townships subdivided under contracts dated the later part of 1846 or later have closing corners only on correction lines.

It appears public land survey work in Iowa was essentially completed by about 1855. In accordance with the Act of July 28, 1866, the Iowa and Wisconsin surveyor general office at Dubuque was closed June 30, 1866, and the Nebraska Territory and Iowa surveyor general office was established at Plattsmouth, Nebraska in May 1867. Iowa survey records were turned over to the state in March 1868. Early surveys in Minnesota were also administered out of Dubuque until the office of Surveyor General of Minnesota was opened in Saint Paul on May 23, 1857. Wisconsin was approved for statehood in 1846 but a boundary uncertainty delayed their actual entry date a couple of years. Wisconsin survey records were turned over to the state in August 1866. Minnesota became a state in 1858. Minnesota survey records were turned over to the state in February 1908.

Control Lines in Iowa

The Fifth Principal Meridian enters the State of Missouri in township 21 north, crosses the Missouri River in township 44 north, passes 39 miles west of St. Louis, and intersects the Mississippi River at township 53 north. It is discontinued at this point and does not resume until township 77 north is

reached, above the bend of the Mississippi River in Iowa. It terminates at its intersection with the Mississippi River in township 91 north. A portion of Jenifer Sprigg's December 18, 1832, notes read as follows:

Chains	Links	
80	00	Set a post in mound corner of sec. 1 and 12, 6 and 7, T.67 N., R. 4 and 5 W. 5th P.M.

North along the east side of sec. 1, T. 67 north of the base line, of range 5, west of the 5th P.M.

11	44	Intersected the north boundary line of the half breed Sacs and Fox Reservation 16.39 chains S. 86 1/2 W. of the corner marked 169 1/2 M. At said intersection raised a mound in which set post (beneath which deposited charcoal) corner of fractional sec. 1 and 6, T. 67 N., Range 4 and 5 W. Land level rich prairie, fit for cultivation.

The described intersection is where William A. Burt, who ran the 5th P.M. up through Iowa, started about four years later. The corner marked "169 1/2" was a half mile post on the extension of an Indian boundary run out by John C. Sullivan in 1816 (Sullivan line of 1816). The Sullivan line was to mark the west and north boundaries of the November 10, 1808, Osage Indian session. It started on the east bank of the Missouri River opposite the mouth of the Kansas River, ran north one hundred miles to "the old northwest corner of Missouri", thence ran east to the Des Moines River. Later work found the east/west portion of the Sullivan line was neither straight nor a true east line. Sprigg located Sullivan's 150th mile post on the west side of the Des Moines River in April 1832, and carried this distance on east on a compass course of north 86º30' east with a variation of 8º east across the Des Moines River to the Mississippi River to establish the north line of the Half-Breed Reservation in Lee County. Sprigg came to the right (west) bank of the Mississippi River at 172 miles 10.00 chains. The mile markers on Sullivan's Line, on the United States Supreme Court ordered retracement of the Sullivan Line in 1850, and Sprigg's extension across Lee County in 1832 do not necessarily correspond to section corners.

Subdivision work in Iowa got seriously under way in 1836 with William A. Burt's contract to run the 5th P.M. through Iowa. Portions of the 1836 letter (Letter Book A: 141, 1836) containing his instructions follow:

> "You will commence at post and mound in prairie, on the Northern boundary of the Reservation for Sacs & Fox Half-Breeds, where it is intersected by the line between Ranges 4 & 5 West of the 5th Pincipal Meridian in Town 67; which point of intersection is represented on the plats to be 11 Chs 44 lks north of corner of Secs. 1 & 12, T 67 North, R.

5 West."

"From the corner referred to you will run a Standard line due North to the corner of townships 78 & 79. From thence run a line of correction West to the West boundary of the purchase, and East to the Mississippi River. On the correction line, it would be well to make about two chains excess of measure in each range, to compensate for the convergency at the next correction line."

"The 5th Principal Meridian is then to be continued up to Towns. 88 & 89, where a second correction line is to be run. Mr. Lyon will run the second correction line between Towns. 88 & 89, and all the Town. lines North of it."

"However, if you should find that by continuing the 5th Meridian up to the river, you could more readily communicate with Mr. Lyon (as the meridian may strike not far from Cassville) you may do so. And indeed I think this is the most advisable course. From the point where you reach the river with the Mer. you will make an accurate connection thereof with some known point or corner of the surveys east of the river."

"Returning now, to your own correction line between Ts. 78 &79, you will commence running the Town. lines in your own Contract. As the country East of the Mer. will be first wanted for subdivision, you will survey that part first."

"Supplemental Instructions, for West of the Mer., will be furnished to you when the field notes of the West Boundary of the Cession are received from the General Land Office."

The network of correction lines, meridians and township exteriors continued across the state from southeast to northwest as Indian title was cleared. The practice of placing an extra measure of two chains east/west in each range along correction lines as contained in the 1836 special instructions to William A. Burt was soon changed to three chains excess. It appears the three chains excess first showed up in 1843 instructions to Alvin Burt (Letter Book B: 202, Dubuque, May 8, 1843) and Jeremiah E. Whitcher (Letter Book B: 203,

Dubuque, May 8, 1843). The last correction line special instructions in Iowa would seem to be those issued to James M. Marsh (Letter Book D: 96, Dubuque, July 9, 1849) which maintain the three extra chains in the "last half of every sixth mile."

The meridian, base and correction line contracts also included a region of township exteriors and interiors. Other contracts were only for township interiors.

Outside of the Half-Breed Reservation in Lee County, Township 67 North is the southernmost township that is at least partially in Iowa. The Iowa Base Line runs between Townships 67 North and 68 North from the Mississippi River west across the state through Range 33 West. It then jogs north one township between Ranges 33 West and 34 West and continues west to the Missouri River between Townships 68 North and 69 North. Subsequent surveys of township exteriors and interiors were run south from the Iowa Base Line closing on the Iowa/Missouri border westward through Range 33 West. Surveys in Range 34 West and westward to the Missouri River were run north closing on the Iowa Base Line as a continuation of the Missouri surveys.

In Lee County, Sprigg's Sullivan Line extension is not a section line as the section numbers obtained in the Half-Breed Reservation are also continued north of Sprigg's Sullivan Line extension. This is a unique situation creating a jog in north/south section lines that is not at a section corner. The Iowa/Missouri boundary is a section line from the Des Moines River westward through Range 33 West. In Range 34 West and westward to the Missouri River, the Iowa/Missouri boundary is not a section line and does not have any closing corners on it. By contrast, the Iowa/Minnesota boundary is both a section and a township line, as well as furnishing a base line for surveys in Minnesota.

Thus fractional sections closing on the Iowa Base Line would only be found in Ranges 34 West and westward. Section 4 in Township 68 North, Range 34 West contains a stated 280 plus acres consisting of 80 acre south half southwest and southeast quarters and two fractionals of 60.12 and 60.10 acres. By Range 40 West any remnant of sections 1 through 6 has disappeared.

The Iowa First Correction Line runs from the Mississippi River to the Missouri River between Townships 78 North and 79 North. The sections closing from the south on the First Correction Line are about normal size at the Mississippi River but become long north/south right away. At Range 23 West, about the middle of the state, Section 4 contains a stated 801 plus acres consisting of 160 acre southwest and southeast quarters, eight 40 acre lots and four fractional lots of 43.41, 41.42, 39.42 and 37.43 acres. By Range 33 West, Section 4 contains a stated 1,149 acres plus consisting of 160 acre southwest and southeast quarters, sixteen 40 acre lots and four fractional lots of 47.49,

47.46, 47.44 and 47.41 acres. By Range 44 West on the west side of the state, Section 4 contains a stated 1,050 plus acres consisting of 160 acre southwest and southeast quarters, sixteen 40 acre lots and two fractional lots of 46.05 and 44.03 acres.

The Iowa Second Correction Line runs from the Mississippi River to the Missouri River between Townships 88 North and 89 North. The sections closing from the south on the Second Correction Line appear to be long north/south across the entire state, but not as extreme as those closing on the First Correction Line. At Range 23 West, Section 4 contains a stated 668 plus acres consisting of 160 acre southwest and southeast quarters, 80 acre south half northwest and northeast quarters and four fractional quarter quarters of 47.55, 47.28, 47.01 and 46.74 acres. At Range 33 West, Section 4 contains a stated 748 plus acres consisting of 160 acre southwest and southeast quarters, eight 40 acre lots and two fractional lots of 54.09 and 53.93 acres. At Range 40 West, which is about the maximum, Section 4 contains a stated 768 plus acres consisting of 160 acre southwest and southeast quarters, 80 acre south half northwest and northeast quarters and four fractional quarter quarters of 72.47, 72.17, 71.88 and 71.58 acres. At Range 44 West, Section 4 contains a stated 741 plus acres consisting of 160 acre southwest and southeast quarters, 80 acre south half northwest and northeast quarters and four fractional quarter quarters of 65.32, 65.28, 65.24 and 65.20 acres.

The Iowa Third Correction Line only runs from the Mississippi River west through Range 10 West between Township 98 North and 99 North. The sections closing from the south on the stub Third Correction Line appear to be normal size.

The Iowa/Minnesota Boundary is the northward termination of Township 100 North. These townships all have been shorted in that Sections 1 through 6 do not exist in these townships except in Ranges 3, 4, 5, 6 and 7 West where they measure 0.21 to 4.35 chains government measure. Sections 7 through 12 are normal size on the east side of the state but grow shorter north/south. By Range 23 West, Section 9 contains a stated 500 plus acres consisting of 160 acre southwest and southeast quarters and four fractionals of 45.33, 45.20, 45.08 and 44.95 acres. At Range 33 West, Section 9 contains a stated 540 acres plus consisting of 160 acre southwest and southeast quarters and four fractionals of 55.48, 55.31, 55.16 and 55.01 acres. At Range 44 West, Section 9 contains a stated 365 acres plus consisting of 80 acre south half southwest and southeast quarters, four 40 acre south half quarter quarters and four fractionals of 11.40, 11.41, 11.41 and 11.42 acres. At Range 48 West, Section 9 contains a stated 415 acres plus consisting of 80 acre south half southwest and southeast quarters and four fractionals of 63.92, 63.86, 63.83 and 63.80 acres.

Five guide or standard meridians were run in Iowa. William Burt ran a standard meridian between Ranges 4 West and 5 West from the north line of the Half-Breed Reservation in Lee County north to the line between Townships

78 North and 79 North. He then worked east on the First Correction Line between Townships 78 North and 79 North to the Mississippi River. The Fifth Principal Meridian could then be run north and south between its intersections with the Mississippi River. James Marsh ran a standard meridian between the Iowa Base Line and the First Correction Line between Ranges 25 West and 26 West. Alexander Anderson ran a standard meridian between the Second and First Correction Lines between Ranges 39 West and 40 West. Charles Lewis ran the last standard meridian in Iowa between the Second Correction Line and the Iowa/Minnesota Boundary between Ranges 40 West and 41 West.

Corner Monuments in Iowa

The original government field notes indicate most corners set in Iowa were posts in earth mounds with pits nearby where the earth was obtained for the mounds. The General Surveying Instructions to Deputy Surveyors in Illinois and Missouri received with letter for U.S. Surveyor General dated January 9, 1834, that may have been used in far southwestern Iowa, encouraged the use of stone monuments, and these original government field notes indicate many stones were used in these surveys instead of wood posts.

George B. Sargent, Iowa Surveyor General March 1851 to April 1853, had a standard paragraph (8g) that called for stone monuments (Dodds book page 361). He had previously held a surveying contract in far southwestern Iowa under Missouri administration where he had used stone extensively.

> "Whenever practicable, you will deposit a stone at the centre of the bottom of your mounds three inches below the natural surface, and give in each case the name, shape and contents of the same in your field notes. Where this is impracticable, you should if possible take the bearing of some notable object, a boulder, lone tree, or other conspicuous object and enter the same in your field notes. Where one and but one tree exists within ten chains of a corner the same should be taken as a bearing, in addition to a mound and pit; and where two trees stand within ten chains of a corner, both should be taken, in which case no mound will be required, or in lieu of mounds and posts of wood, you may insert a stone–giving name, shape and contents of same in your field notes–endwise into the ground to depth of seven or eight inches; the contents of which must equal a length of 14, a width of 12, and thickness of three inches, and the edges of which must be set north and south on Meridian and East & West on East and West lines. These stones, must, in every instance, be distinctly "notched" (with a chisel or other proper instrument) as directed in your printed instructions for posts. At quarter section corners ¼ must be plainly cut upon the opposite sides of the stone, and these sides set facing the

two sections between which such quarter section corner exists."

Mr. Sargent appears to use this standard paragraph in his contracts through 1851, but not thereafter. It may have been because the 1851 "Oregon Manual" contained basically the same instruction.

Lotting in Iowa

Many of the lots found on Iowa original township plats will show their fractional acreage but may not show a number. The following letter (found in White's *A History of the Rectangular Survey System*), identified as a circular to Surveyors General may explain this absence of lot numbers.

GENERAL LAND OFFICE
8th May, 1832

SIR:

Enclosed is a copy of the instructions to Registers and Receivers of the District Land Offices, as prescribed by the Secretary of the Treasury, under the act of Congress, approved on the 5th ult., entitled "An act supplementary to the several laws for the sale of public lands." *(An Act of April 24, 1820, had authorized the sale of half quarter sections with the quarter section split running north and south. Now the Act of April 5, 1832, added quarter quarter sections with the half quarter section split running east and west.)*

The Registers of the Land Offices within your surveying department have been requested to furnish you with a schedule of such fractional sections, and parts of fractional sections, remaining unsold, as are liable to be subdivided under the act referred to.

The Secretary of the Treasury directs that in making the subdivisions of those lands into quarter quarter sections, in pursuance of the provisions of this act, and on the principles of the act approved on the 11th February, 1805, entitled "An act concerning the mode of surveying the public lands of the United States," you will be particularly careful not to leave fractions of less quantity than that contained in a quarter quarter section, or thereabouts, as nearly as practicable.

Where a portion of a fractional section has heretofore been sold, the residuary portion will of course have to be subdivided, subject to any embarrassments resulting from the previous subdivisions of the portion sold.

In all cases where the quantity of the fractional section or the

portion thereof remaining unsold, and liable to be subdivided under the act of 5th April, 1832, admits of the sale of one or more quarter sections, you will subdivide such quarter sections into quarter quarter sections, and they will be described by the Registers as quarter quarter sections; and in describing the residuary lots or portions of such fraction, due reference must be had to the mode adopted in describing the portion of the fraction which has been sold. For instance, where the portion of a fraction heretofore sold has been described as a lot bearing a special number, the residuary fractions will have to be described as lots bearing numbers in a series consecutive to that commenced by the former subdivision. **But where the lots or portions heretofore sold in the fraction have been described in reference to their relative position in the fraction and not by numbers, the description of the residuary portions of the fraction is also to be in reference to their position, and not by numbers.**

Fraction sections containing less than one hundred and sixty acres, or the residuary portion of a fractional section, after the subdivision into as many quarter quarter sections as it is susceptible of. may be subdivided into lots, each containing the quantity of a quarter quarter section, as nearly as practical, by so laying down the line of subdivision as that they shall be twenty chains wide; which distances are to be marked on the plat of subdivision, as are also the areas of the quarter quarters and residuary fractions.

In all cases where the land is described in reference to its relative position in the fraction, and not as a lot bearing a special number, the proper mode of describing it must be written in a tabular statement annexed to the plat of subdivision.

You will be pleased to prepare and transmit to the several Registers the necessary plats of subdivisions as promptly as practical after they shall have furnished you with schedules of the tracts to be subdivided. Copies of such plats are to be furnished at the same time to this office. The township plats hereafter to be prepared at your office must exhibit the subdivisions authorized by this act.

I am, very respectfully,
Your ob't. servant,
ELIJAH HAYWARD (GLOCommissioner, /30/1830 to 1835)

Shortly thereafter, the Manual of Surveying Instructions 1855 gave instruction as follows:

The subdivisions of fractional sections into forty acre lots, (as near as

may be,) are to be so laid down on the official township plat in *red* lines, **as to admit of giving to each a specific designation, if possible, according to its relative position in the fractional section, as per examples afforded by diagram B, as well as by a number, in all cases where the lot cannot properly be designated as a quarter-quarter. Those fractional subdivision lots which are not susceptible of being described according to relative local position, are to be numbered in regular series; No. 1 being (whenever practical, and as a general rule) either the northeastern or the most easterly fractional lot, and proceeding from east to west and from west to east, alternately, to the end of the series; but such general rule is departed from under circumstances given as examples in fractional sections 4, 7, 19 and 30, where No. 1 is the interior lot of the northern and western tiers of the quarter sections to which there is a corresponding No. 2 given to the exterior lot, and the series of numbers is in continuation of the latter. The lots in the extreme northern and western tiers of quarter sections, containing either more or less than the regular quantity, are always to be numbered as per example.** Interior lots in such extreme tiers are to be *twenty* chains wide, and the excess or deficiency of measurement is always to be thrown on the exterior lots; elsewhere, the assumed subdivisional corner will always be a point equidistant from the established corners.

Iowa-Missouri Boundary

The Dodds Iowa book contains much detail on all the Iowa state boundaries with an entire chapter on the Iowa-Missouri boundary.

The Indian boundary run out by John C. Sullivan in 1816 (Sullivan line of 1816) was to mark the west and north boundaries of the November 10, 1808, Osage Indian session. It started on the east bank of the Missouri River opposite the mouth of the Kansas River, ran north one hundred miles to "the old northwest corner of Missouri", thence ran east to the Des Moines River. Later work found the east/west portion of the Sullivan line was neither straight nor a true east line.

Missouri was admitted to statehood March 6, 1820, with her constitutional boundary description reading in part ". . . where the said parallel (parallel of

latitude of thirty-six degrees and thirty minutes) is intersected by a meridian line passing through the middle of the mouth of the Kansas River, where the same empties into the Missouri River; thence from the point aforesaid, north, along the said meridian line, to the intersection of the parallel of latitude which passes through the rapids of the River Des Moines, making the said line correspond with the Indian boundary line; thence east, from the point of intersection last aforesaid, along the said parallel of latitude, to the middle of the channel of the main fork of the said River Des Moines; thence down along the middle of the main channel of the said River Des Moines to the mouth of the same, where it empties into the Mississippi River . . ." On June 7, 1836, Congress passed an act to extend the western boundaries of Missouri to the Missouri River as soon as the Indian title was quieted. Missouri agreed with the new part westward to be a continuation of the old "in a right line to the west."

One Joseph C. Brown was appointed by the State of Missouri in 1837 to run out their north boundary. He searched for the rapids in the Des Moines River and decided upon a point in the great bend of the river around where Keosauqua is now located, and ran this line westward to the Missouri River. Missouri then claimed to Brown's line.

On June 18, 1838, Congress passed an act providing for the survey and marking of the southern boundary of Iowa. Major Albert Lea, special United States boundary commissioner investigated the situation and by report of January 19, 1839, suggested the possibility of four different lines as follows:

1. The old Indian boundary, or Sullivan's line, extended west to the Missouri River.
2. The parallel of latitude passing through the old northwest corner of the Indian boundary.
3. The parallel of latitude passing through the Des Moines rapids in the Mississippi River.
4. The parallel of latitude passing through the rapids in the Des Moines River at the great bend.

The location of the Iowa-Missouri boundary became a very hot issue between the states and the border residents, and the two states sued each other in the U.S. Supreme Court. The Supreme Court ruled that the Sullivan line is the proper border, along with a due west line from the "old northwest corner" established by Sullivan, and ordered the line to be reestablished on the ground.

This survey was carried out in 1850 by surveyors William Dewey for Iowa and Robert Walker for Missouri. Dewey and Walker discovered the "old northwest corner" was lost and established it by measuring three miles north from the found Sullivan 97th mile corner, and three miles west from a found Sullivan witness tree at the 3rd mile on the east line. This location fell on the

south side of Section 35, Township 67 North, Range 33 West of the Fifth Principal Meridian in what is now Taylor County, Iowa. "At the corner so determined we planted a large solid cast iron pillar, weighing between fifteen and sixteen hundred pounds, four feet six inches long, squaring twelve inches at its base and eight inches at its top. This pillar was deeply and legibly marked with the words (strongly cast into the iron) "Missouri" on its south side, "Iowa" on its north side and “State Line” on the east." (Boundary Commissioners' Report to the Supreme Court).

Dewey and Walker then ran a line west to the Missouri River as a parallel of latitude. Solid pillars of cast iron weighing each between three and four hundred pounds with the word "Boundary" facing both the east and the west, and the word "Iowa" facing the north and the word "Missouri" facing the south were set every ten miles. All these pillars were four feet long but the thirty mile multiple pillars were eight inches square at the base and five inches square at the top; the rest were seven inches square at the base and four inches square at the top. A pillar similar to the one at the "old northwest corner" was planted at the 60th mile on high ground and a post was set on the east bank of the Missouri River, 61 miles and 61.0 chains west of the "old northwest corner."

Dewey and Walker next returned to the "old northwest corner" and started east tracing out Sullivan’s line. They found it varies in direction with sudden deviations of two to three degrees. Dewey and Walker were using a Burt’s Solar Compass with a telescope. They reported that Sullivan had used only one variation of the needle in his work and that this variation was too great causing an increase in northing as the line proceeded east. Sullivan's line apparently deviates to the north in an easterly direction somewhere between two and three miles from the "old northwest corner" to the Des Moines River. Dewey and Walker reported finding the following Sullivan corners: 3rd mile, 13th mile, 19th mile, 21st mile, 34th mile, 39th mile, 42nd mile, 43rd mile, 44th mile, 49th mile, 54th mile, 58th mile, 66th mile, 67th mile, 77th mile, 88th mile, 89th mile, 90th mile, 91st mile, 92nd mile, 93rd mile, 96th mile, 97th mile, 99th mile, 100th mile, 101st mile, 102nd mile, 103rd mile, 107th mile, 110th mile, 111th mile, 112th mile, 128th mile, 132nd mile, 139th mile, 140th mile, 141st mile, 143rd mile, 145th mile. They also found some of Sullivan’s blazes and line trees. They recovered the terminus of Sullivan’s line on the west bank of the Des Moines River at 151 miles, 51.80 chains. Their chaining was 11.80 chains greater than Sullivan’s, and their corners therefore do not fall at the found Sullivan corners. Again they set cast iron monuments at ten mile multiples, but also set posts at the other mile points on the east line. They set only a post at the 150th mile corner because the terminal marker was so close. They set their terminal cast iron marker, like the one at the "old northwest corner," 151 miles, 50.00 chains east of the "old northwest corner" on the west bank of the Des Moines River.

The United States Supreme Court accepted Dewey's and Walker's work and ordered that the Iowa/Missouri boundary west of the "old northwest corner" is defined by a line running through the center of the cast iron markers set. The Iowa/Missouri boundary east of the "old northwest corner" is defined by straight lines running between the posts and cast iron pillars set. In 1896, the United States Supreme Court ordered the retracement of the boundary especially between the 50th and 55th mile posts. This resulted in a retracement using United States Coast and Geodetic Survey personnel between mile 50 and mile 60.

Since the Iowa/Missouri boundary was not marked on the ground until 1850, it was difficult to tie any surveys in Iowa or Missouri before 1850 into it. Some intersecting survey contracts were before 1850 and some were after 1850. John W. Williams did connecting surveys to the boundary in Appanoose, Davis and Van Buren counties under an 1853 contract, and William Shields did connecting surveys in Fremont, Page, Taylor and Ringgold counties under an 1852 contract.

The Iowa/Missouri boundary is a section line from the Des Moines River westward through Range 33 West. In Range 34 West and westward to the Missouri River, the Iowa/Missouri boundary is not a section line and does not have any closing corners on it.

The State of Missouri contracted a search and GPS tie project for the original border monuments in 2006 with a good success rate.

Iowa-Minnesota Boundary

The Iowa-Minnesota boundary is along the 43 degrees 30 minute parallel of latitude. The work was done under the direction of Captain Andrew Talcott in 1852 and approved in 1853. The Iowa/Minnesota boundary is a section, township and correction line.

East and West Boundaries

The Iowa east and west boundaries are water boundaries, subject to positional changes. It seems the Missouri River has created the most problems in this regard with a history of litigation between Iowa and Nebraska. See the book *Slide Mountain or The Folly of Owning Nature* by Theodore Steinberg for leisure reading about Blackbird Bend cases between the Omaha Indian Tribe and private land owners in Monona County.

Center of Section in Iowa

It is fact that the Federal Act of February 11, 1805, states the center of a regular section is found by intersecting straight lines between opposite quarter corners. The specific language used was "And the boundary lines, which shall not have been actually run, and marked as aforesaid, shall be ascertained by running straight lines from the established corners to the opposite corresponding corners." The principles of the Act of February 11, 1805, are now found in the United States Code, Title 43 - Public Lands, Chapter 18 - Survey of Public Lands, Section 752. Boundaries and contents of public lands; how ascertained.

Alternative methods of section subdivision apparently existed. C. Albert White, in *A History of the Rectangular Survey System*, details that in 1856, John Loughborough, Surveyor General of Illinois and Missouri, prepared his own *Instructions to Deputy Surveyors* (126). A draft was furnished to Thomas A. Hendricks, General Land Office Commissioner, 1855-1859, who gave his approval to have them printed and requested 200 copies be sent to him. These instructions contained a statement that "None of the Acts of Congress, in relation to the Public Lands, make any special provision in respect to the manner in which the subdivisions of Sections should be made by Deputy Surveyors" (Note *Act of February 11, 1805*, mentioned above and also the *Act of April 5, 1832*, that permits Federal sales of public lands down to the quarter-quarter section unit and directs the subdivision method to follow the principles laid down in the *Act of February 11, 1805*.). Loughborough's instructions went on to direct that the center of section should be established at midpoint on the east-west centerline, and that the center of quarter sections should be established in the same manner. The 200 copies sent to Hendricks apparently were distributed to county surveyors asking how to subdivide sections until the supply ran out about 1863. *Original Instructions Governing Public Land Surveys of Iowa*, edited by J.S. Dodds et al., gives credit for the incorrect rule to Hendricks (388), but it seems more likely he just perpetuated Loughborough's mistake. C. Albert White, in *A History of the Rectangular Survey System*, comments Hendricks was a political appointee with no known background in surveying and land laws, was being swamped with technical questions about problems arising from the public land survey, and probably didn't have time to carefully analyze each one (113).

In *Brown's Boundary Control and Legal Principles*, 4th ed., it is reported that Wisconsin passed a law in 1862 that required the center of section of regular sections to be established equally distant from the east and west quarter corners, and also equally distant from the north and south quarter corners (243). The law was repealed in 1867 in favor of one that required use of the "Statutes of the United States and the rules and regulations made by the Secretary of the Interior in conformity thereto."

Even before Loughborough's instructions, Iowa territorial legislators had, at their session beginning November 2, 1840, passed a law as follows:

Section 2. **Mode of making sub-divisions.** Whenever a surveyor is required to make a sub-division of a section, as established by the United States survey, he shall proceed as follows, (except when the section is fractional): commencing at the quarter corner, on either the east or west side of the section, and shall run east or west across said section as the case may be, and establish a common centre therefor, on a direct line between said corners, and equally distant from either. Any less sub-division than a quarter section shall be made by proceeding in the same manner, except in fractional sections.

When the statute laws of Iowa were systematically encoded to form the Iowa Code 1851 (The Iowa Code 1851 was passed as a single act of the Iowa General Assembly approved February 5, 1851.), the above method simply disappeared from Iowa statute law.

Original Instructions Governing Public Land Surveys of Iowa also states the incorrect rule for establishing the center of section was expressly overruled by the Secretary of the Interior in 1868 (388). This occurrence is not more specifically identified but C. Albert White, in *A History of the Rectangular Survey System*, includes several instances where the Commissioner of the General Land Office is responding to questions about the subdivision of sections. One such example is as follows:

H.S. Hoover, Esq.
Waverly, Bremer Co.,
Iowa

Department of the Interior
General Land Office
July 6, 1866

Sir:

In your letter of the 16th ultimo you inquire how sections of the public lands should be subdivided. As you do not refer to any particular section, I assume that your inquiry does not relate to peculiar or anomalous sections but to the regular sections containing 640 acres. The law prescribes the following rules for subdividing sections:–

The section and quarter section corners established by the U.S. Deputy must stand as the true corners. To divide the sections into halves or quarters *straight lines* must be run from the established corners to opposite corresponding corners, the intersection of the lines so run will be the legal center of the section. The quarters may be again divided into half quarters or quarter quarters by straight lines run from points equidistant from the center of the section and the quarter section post to their corresponding opposite points equidistant between the section corners, and intersection of lines thus run will be the legal center point of the quarter section.

Very Respectfully

Your Ob't Ser't
J.M. Edmunds
Commissioner

It is White's contention that such a letter was probably written by J.H. Hawes, Principal Clerk of Surveys, and signed by the Commissioner. After J. H Hawes left the General Land Office, he wrote and published *Manual of United States Surveying*, which White calls an excellent reference to the policies in effect while Hawes was Principal Clerk of Surveys. It is not an official document of the General Land Office. It is speculated that Hawe's *Manual* may be the source of the statement that the Secretary of the Interior expressly overruled the incorrect rule for establishing the center of section in 1868.

Another letter copied from White's book may be of interest:

Department of the Interior
General Land Office
Washington, D.C.
February 15, 1872

Hon. H.C. Burchard
House of Representatives
Sir:

I have the honor to acknowledge the receipt, by reference from you, of a letter from Mr. M. Montelins dated Cedarville, Stephenson County, Illinois, 29th ultimo, desiring information in regard to the proper method of establishing the centers of sections, and in reply, I have to say as follows:–

This office has not authority to *issue instructions* for the subdivisions of lands which have been disposed of by the government and when called upon for an opinion in the matter, can only point out the manner in which the law requires said subdivision to be made.

Under the provisions of the *Act of Congress, approved February 11, 1805*, the course to be pursued in subdivision of Sections is to run straight lines from the established quarter section corners–U.S. Surveys–to the opposite corresponding corners, and the *point of intersection* of these lines will be the *corner common to the several quarter sections.*

The "Instructions to the Deputy Surveyors of the United States for the District of Illinois and Missouri", issued in the year 1856, contains directions for the subdivision of Sections, which, though not in strict accordance with the requirements of the Act above referred to, is the method which has been adopted by many County Surveyors in Illinois.

In some cases the Surveyor General Subdivided the Sections upon the

original plats by the rule laid down in said "Instructions" and the lands have been sold according to such subdivision.

Many purchasers of lands subdivided upon the plats by the Surveyor General, or subdivided by County Surveyors according to the rule given in the "Instructions" have held possession for many years, and have fenced their lands and made other improvements in such manner that, a change in the lines, in order to make them conform to the strict letter of the law, would often work great hardship and it has been the policy of this office, to recommend in such cases the maintenance of the subdivision lines as established in the field.

Mr. M's. letter to you is herewith returned.

I am Sir
Very Respectfully
your Obt Servant
Willis Drummond
Commissioner

White remarks on this letter as follows:

"So far as is known, this policy on "instructions for the subdivisions of lands" is still in force today in the BLM. The opinion expressed with regard to the 1856 Instructions is also abided by if and when any public lands are affected by those improperly executed section subdivisions. The BLM does not presume to tell anyone what they should or should not do on privately owned lands not affecting public lands. Any opinions expressed are still an opinion and advisory only."

On April 16, 1870, the Iowa General Assembly approved the following act (Chapter 183 of the Iowa Thirteenth General Assembly Regular Session):

RE-SURVEY OF LANDS.

AN ACT to Define the Manner in which the Re-survey of Lands shall be made.

SECTION 1. *Be it enacted by the General Assembly of the State of Iowa*, that in the re-survey and subdivisions of lands by county surveyors, their deputies, or other person[s], the rules prescribed by acts of Congress and the instruction[s] of the Secretary of the Interior, shall be in all respects followed.

SECTION 2. Said rules and regulations shall be published in pamphlet form under direction of the Register of the State Land Office, and one copy furnished for the use of each county surveyor.

The general wording in the first section of this act persisted in the Iowa Code

until the Seventy-third General Assembly, 1990 Session, passed Chapter 1236, May 2, 1990, and the wording evolved into present Iowa Code Section 355.3, barring the Iowa Engineering and Land Surveying Examining Board from adopting rules which are inconsistent with Acts of Congress and instructions of the United States Secretary of the Interior.

355.3 Rules.

Pursuant to chapter 542B, the engineering and land surveying examining board may adopt rules consistent with the rules prescribed by the Acts of Congress and the instructions of the United States Secretary of the Interior.

Thus, confusion was introduced into the location of the center of a section at a time in Iowa's history when the county surveyor was a required county officer (1838 to 1911), and there was likely a good demand for section subdivision surveys (A Federal Act of February 15, 1910, closed the last Federal land sales office in the state in 1910.). A possible measure of the effect of this confusion might be found in the review of case law. Not many reported cases featuring a center of section issue were located, and only fairly old cases were found. This indicates either the issue does not generate much litigation, or that the cases where it is a major issue are not establishing new points of law worthy of being reported.

Moreland v. Page, 2 Iowa (2 Clarke) 139, 61 U.S. (20 Howard) 522, 15 L. Ed. 1009 (1855)

This case is an important case for land surveyors but not because of the center of section issue, even though the disputed boundary was the line joining the west and east quarter corners of Section 4, Township 90 North, Range 3 West of the 5th Principal Meridian, Delaware County, Iowa. The north two tiers of sections in this township seemed to contain a lot of lost government corners and the Commissioner of the General Land Office ordered deputy surveyor Edwin James, Jr. to perform a dependent re-survey of the entire township in 1852. Fractional section four ended up short of the original government measure and plaintiff Moreland sought to have all the shortage placed on defendant Page rather than bearing a proportionate share. Moreland lost. The case is also interesting in that Moreland attempted to carry this property dispute beyond the Iowa Supreme Court to the United States Supreme Court. The United States Supreme Court declared they lacked jurisdiction and refused to intervene.

Gerke v. Lucas, 92 Iowa 79, 60 N.W. 538 (1894)

This is a case directly about using the Act of February 11, 1805, "intersecting method" of locating center of section versus the "bisecting method" of splitting the east/west line between opposite quarter corners. Plaintiff Gerke owns the SE 1/4 SW 1/4 Section 12, Township 70 North, Range 3 West of the 5th Principal Meridian, Des Moines County, Iowa; and defendant Lucas owns the south 50 acres of the W 1/2 SE 1/4 said Section 12. Plaintiff Gerke introduced evidence to show that County Surveyor Avery established the center of said Section 12 in 1840 by "bisection," and that this was the general method Avery used. She referenced the Loughborough instructions and the express Iowa legislation requiring the "bisecting method." She lost her plea for use of the "bisecting method" in this case; the Iowa Supreme Court held for the "intersecting method." It may have helped, in this particular case, that defendant Lucas was already in possession of the disputed strip of land created by applying both the "bisecting method" and the "intersecting method." The evidence on the ground may not have supported plaintiff Gerke's contention that "bisection" should be used.

Poleske v. Jones, 192 Iowa 1015, 185 N.W. 917 (1921)

Plaintiff Poleske owns the east 120 acres of the NW 1/4 Section 10, Township 82 North, Range 39 West of the 5th Principal Meridian, Crawford County, Iowa, while defendant Jones is the owner of the SW 1/4 said Section 10. Plaintiff and defendant had agreed to place a new fence between their properties. Both originally endorsed having the proper line surveyed and defendant called on H.B. Fishel, county engineer and surveyor, to make the survey. Fishel satisfied the court that he ran a straight line between the west and east quarter corners in making his survey. Fishel's line ended up about 44 feet north of the existing fence causing a loss of about an acre and a quarter to Poleske. Jones apparently took possession to Fishel's line and Poleske eventually brought this action. There is no indication that either party intended to occupy beyond their described boundaries. Plaintiff Poleske produced field notes of an 1894 private survey by McHenry that indicated McHenry had set the center of said Section 10 by running 160 rods south from the north 1/4 corner said Section 10. Poleske proposed running south 160 rods from the north 1/4 corner said Section 10; running north 160 rods from the south 1/4 corner said Section 10; and, if there were excess, to divide it. The district court rejected McHenry's survey as incorrect, agreed with Fishel's line and found for defendant Jones. The Iowa Supreme Court affirmed. Poleske raised the issue of adverse possession in his appeal to the Iowa Supreme Court but could not prove hostile possession of the disputed strip long enough to satisfy the required ten year period.

Iowa Navigable and Nonnavigable Water Boundaries

"Iowa. The soil in beds of all meandered and navigable streams belongs to the state within which they lie, and the riparian owners take to the high-water mark. The soil of beds of nonnavigable streams belongs to the owners of the shores thereof. In the State of Iowa, the courts hold that the state owns the beds of navigable streams and lakes and that the riparian owner takes to the high-water mark only, and this holding is reflected in the decisions of the United States Supreme Court in cases appealed to that court from Iowa courts. In Iowa, the public authorities have the right to build wharves and levees on the bank of the Mississippi River below high-water mark and to make other improvements necessary to navigation or public passage by railroads or otherwise without consent of the adjacent proprietor and without compensating him." (*Clark on Surveying and Boundaries*, 5th ed. 660-61)

The foregoing generalization stated in Clark is understandably boiled down to omit much of the complexity of navigable and nonnavigable water boundaries. This section examines that complexity in greater detail.

Navigable/Nonnavigable Surface Waters

Classification of surface waters into navigable/nonnavigable has traditionally been a way to separate the waters whose beds are owned by the sovereign from those where title to the bed passes with ownership of the adjacent uplands. "Sovereign" as applied to Iowa would generally mean the title is held by the state in trust for the public.

> "Many of the common-law origins of water law are found in English property law. In viewing these origins, it is well to remember that Britain is an island that, in medieval and later periods, had abundant rainfall and ample stream systems. But during the modern period the rapid increase in population and industry has produced frictions over both supply and quality of supply; this competition over uses, including incompatible uses, has required statutory attention that was virtually unknown in earlier times.
> This system of development resulted in more rapid growth of the law in those areas that produced frequent conflict, but centuries of very slow and halting growth in areas that were seldom the subject of disputes. England, with its humid climate and abundant and usable supplies, had little friction over water until the industrial revolution was well along; this good fortune explains in large part, the extent and rate of water law development." (Stone 179-80, *Waters and Water Rights*, Chapter 3 "Public Rights in Water Uses and Private Rights in Land Adjacent to Water." Stone, Albert W. Indianapolis, IN: The Allen Smith Company, 1967.)

> "The common law of inland waterways has been dependent upon doctrines

which came from the law concerning coastal waters, and coastal waters, in turn, owe their debt to the law of the sea itself. That historic development explains in large part our contemporary emphasis upon "navigability" as a test of the public interest in inland waters; the first and still the primary use of the high seas was and is the transport of cargo and passengers." (Stone 202-03)

"In medieval England the general public exerted few other demands for water use [besides travel], and water was sufficiently plentiful that there were but few conflicts in its use … In short, medieval common law recognized the only substantial public demand for water use that was exerted." (Stone 183)

" … at the time that the United States was formulating its laws concerning inland waters, a substantial and broad public demand for their use was still undeveloped. Throughout most of the history of the United States, there has been little occasion for the law to consider demands other than navigation." (Stone 202-03)

"It is not an accident that the eastern states gradually recognized the riparian system of water rights while, by contrast, the most arid of the western territories developed the appropriation system even before they had been admitted into the Union." (Stone 180, footnote 4)

"Regardless of the ownership of the beds under navigable waters, the property is subject to the navigation servitude of the United States and to free use by the public for travel and transportation, as well as for other public uses (under the majority of modern decisions) such as hunting, boating, bathing, and fishing." (Stone 208-09)

The importance of navigation is recognized in the Northwest Ordinance of 1787, an Ordinance for the Government of the Territory Northwest of the River Ohio passed by the Continental Congress. Navigation is also recognized in the legislative creation of the State of Iowa.

"The navigable waters leading into the Mississippi and St. Lawrence, and the carrying places inbetween the same, shall be common highways and forever free as well to the inhabitants of the said Territory as to the citizens of the United States, and those of any other States that may be admitted into the confederacy, without any tax, impost, or duty therefor." (Northwest Ordinance of 1787, Article 4)

"That the said State of Iowa shall have concurrent jurisdiction on the River

> Mississippi, and every other river bordering on the said State of Iowa, so far as the said rivers shall form a common boundary to said State, and any other State or States now or hereafter to be formed or bounded by the same: Such rivers to be common to both: And that the said river Mississippi, and the navigable waters leading into the same, shall be common highways, and forever free as well to the inhabitants of said State, as to all other citizens of the United States, without any tax, duty, impost, or toll therefor, imposed by the said State of Iowa." An Act for the admission of the States of Iowa and Florida into the Union, March 3, 1845 (US Stat. 5: 742-43)

And finally Article I, Section 8 of the United States Constitution gives the Federal Government an interest in navigation by empowering it "To regulate Commerce with foreign Nations, and among the several States, and with the Indian Tribes; …"

Source of Ownership of Navigable Waters

Martin v. Waddell (41 U.S.(16 Peters) 367), decided in 1842, was a contest for an oyster fishery in New Jersey which required a consideration of the source of title to lands under tidal waters in one of the thirteen original states. It was held that such ownership was an attribute of sovereignty under the British Crown and that when the colonies became independent, they succeeded to that ownership. Upon the formation of the United States, there was no cession of title to the United States, hence the ownership remained in the original thirteen states except where there had been a conveyance by the sovereign.

In 1845, Pollard v. Hagen (44 U.S.(3 Howard) 212), involving rights in tidal land in Alabama was decided. It was there held that states that were not among the original thirteen were nevertheless admitted on an "equal footing." They therefore took title to the beds of their navigable waters upon their admission to the Union.

> "Although these landmark cases actually involved land under tidal waters, the doctrine has been consistently applied in subsequent cases to inland nontidal waters later defined as navigable under the commerce clause (Barney v. City of Keokuk, 94 U.S. 324)." (Stone 206-07)

The Barney v. City of Keokuk case, decided in 1876, involved the owner of a public street riparian on the Mississippi River, bringing an action of ejectment against the City of Keokuk, Iowa. The city had widened the street extensively by placing fill in the river, and allowed the use of the street for railroads, wharves, a railroad depot building, and a steamship depot building. Generally the city was found to be operating within its authority.

The Federal Test for Navigable Waters

The test for public navigable waters used in England was that the waters exhibit the ebb and flow of tides. This test was put forth as a partial defense in a case involving the collision of a steamship with a sailing vessel on Lake Ontario, decided in 1851 (The Genesee Chief, 53 U.S.(12 Howard) 443). It was rejected as not being realistic in application to the large inland lakes and rivers of the United States.

> "Those rivers are public navigable rivers in law that are navigable in fact when they are used, or are susceptible of being used, in their ordinary condition, as highways for commerce, over which trade and travel are or may be conducted in the customary modes of trade and travel on water. And they constitute navigable waters of the United States within the meaning of the acts of Congress, in contradistinction from the navigable waters of the States, when they form in their ordinary condition by themselves, or by uniting with other waters, a continued highway over which commerce is or may be carried on with other States or foreign countries in the customary modes in which such commerce is conducted by water" (The Daniel Ball, U.S. 77 (10 Wallace) 557).

This 1870 case deals with a commercial vessel using the Grand River in Michigan without having been inspected or licensed under the laws of the United States.

> "The navigability of a stream, for the purpose of bringing it within the terms "navigable waters of the United States," does not depend upon the mode by which commerce is conducted upon it, as whether by steamers, or sailing vessels, or Durham boats, nor upon the difficulties attending navigation; such as those made by falls, rapids, and sandbars, even though these be so great as that while they last they prevent the use of the best means, such as steamboats, for carrying on commerce. It depends upon the fact whether the river in its natural state is such as that it affords a channel for useful commerce" (The Montello U.S. 87 (20 Wallace) 430).

This 1874 case deals with commercial use of the Fox River in Wisconsin and is a useful supplement to *The Daniel Ball* case in defining navigable waters of the United States.

Thus the Federal test for navigable waters of the United States as applied to "Commerce with foreign Nations, and among the several States, and with the Indian Tribes" is simply stated as "navigable in fact, navigable in law."

State Tests for Navigable Waters

Each state has the freedom to define "navigability" within their own jurisdiction. In addition, a state may have "navigability" definitions that apply only to a specific use such as recreation that do not apply to the ownership of the bed of a stream or lake. It is probably useful in Iowa, at least, for ownership questions, to keep in mind the extent of the lands the Federal Government regarded as saleable in disposing of the public domain.

Navigable Waters in the Rectangular Land System

The general instructions to deputy surveyors directed them to meander navigable streams in the sectionalized subdivision of the public lands so those areas could be excluded from land sales. Additional instructions related to ponds and lakes. Some examples of such instructions are:

> "12th. *Navigable streams* are declared by law to be *public highways*. Except in cases where navigable streams constitute the boundary line between two land districts, and where the ranges and townships in each district are numbered from different meridians and base lines, they are not to interrupt the regular survey of the township lines, which are to be continued across such stream for the exact distance. Each border of such stream is however to be meandered by course and distance, and a fractional portion of the same township will be constituted on each side thereof to be denominated, as the case may be, the fraction of township north or south, or east or west of such stream, having special regard, in such designation, to the *general course* thereof from its source to its mouth." (*GENERAL INSTRUCTIONS OF 1831, GENERAL LAND OFFICE, 23rd September 1831*)

> "1. In subdividing any one township, you are to meander as hereinafter directed, any lake or lakes, pond or ponds, lying entirely within the boundaries thereof, of the area of forty acres and upwards, and which cannot be drained and are not likely to fill up, or from any cause to become dry.
> 2. Whenever required by special instructions, to meander any stream or body of water, passing through or lying within your district, you are also to meander all islands situated therein, which are valuable for their soil or timber." *(GENERAL INSTRUCTIONS. OFFICE OF THE SURVEYOR GENERAL OF WISCONSIN AND IOWA. Dubuque, May 28, 1846*)

> "1. In subdividing any one township, you are to meander as hereinafter directed, any lake or lakes, pond or ponds, lying entirely within the boundaries thereof, of the area of forty acres and upwards, and which cannot be drained and are not likely to fill up, or from any cause to become dry.

2. Whenever required by special instructions, to meander any stream or body of water, passing through or lying within your district, you are also to meander all islands situated therein." (*GENERAL INSTRUCTIONS. OFFICE OF THE SURVEYOR GENERAL OF WISCONSIN AND IOWA, 1851*)

"2. Both banks of *navigable rivers* are to be meandered by taking the courses and distances of their sinuosities, and the same are to be entered into the field book. …
3. You are also to meander, in manner aforesaid, all *lakes* and deep ponds of area of twenty-five acres and upwards; also navigable bayous; *shallow* ponds, readily to be drained, or likely to dry up, are not to be meandered." (*INSTRUCTIONS TO THE SURVEYORS GENERAL OF PUBLIC LANDS OF THE UNITED STATES FOR THOSE SURVEYING DISTRICTS ESTABLISHED IN AND SINCE THE YEAR 1850; CONTAINING, ALSO A MANUAL OF INSTRUCTIONS TO REGULATE THE FIELD OPERATIONS OF DEPUTY SURVEYORS, ILLUSTRATED BY DIAGRAMS. WASHINGTON: 1855*)

The general instructions were supplemented by special instructions that often accompanied surveying contracts issued by a surveyor general office. In Iowa, it appears that the initial decision to meander rivers was assigned to the deputy surveyors who received contracts for running exterior township lines:

"All rivers and bayous which you judge navigable, are to have meander posts set on them." (1836 letter of instructions to William A. Burt for exterior township lines in eastern Iowa)

"You will establish meander posts on the Iowa River to towns 77 & 78 N. but your judgement must be exercised with regard to the propriety of establishing meander posts in Towns 80 N. if you deem it navigable, you will do so, otherwise not. You will also exercise your judgement on Skunk River & other Streams." (November 6, 1840, letter of instructions to Uriah Biggs for exterior township lines in southeastern Iowa)

Instructions for subdividing into sections were generally more specific as to meandering:

> "The Mississippi river is to be meandered on the right bank, and also the Muscatine slue on both sides together, with any other navigable slues of the Mississippi in your district.
> The Iowa and Red Cedar rivers are to be also meandered on both sides, with all Islands in them, which would be saleable or worth the expense of survey." (May 9, 1837, letter of instructions to Wm. L. D. Ewing for subdividing into sections in Louisa and Washington Counties)

> "Skunk river which courses through your district is not to be meandered." (July 14, 1845, letter of instructions to James Grant for subdividing into sections in Mahaska and Jasper Counties)

Regardless of these various instructions, the presence or absence of meander lines has not proven to be a conclusive test of "navigability". Simpson reports that " … the presence of meanders only creates a rebuttable presumption that a river was navigable at the time of statehood. A rebuttable presumption here, means that a meandered stream is presumed to be navigable but anyone who disputes the presumption is free to bring in evidence to the contrary" (Simpson 49, *River & Lake Boundaries*. Kingman, AZ: Plat Key Publishing Co., 1994)

> "A legal inference of navigability does not arise from the action of surveyors in running meander lines along the banks of the river. Those officers are not clothed with the power to settle the questions of navigability." (Oklahoma v. Texas, 258 U.S. 574 ,1922)

This interesting land ownership case, driven by the presence of gas and oil deposits beneath the bed of the Red River, furnishes an example of a meandered stream that the courts judged nonnavigable.

Meandered Rivers and Streams of Iowa

The following is a list of meandered rivers and streams of Iowa. The border rivers are assumed fully meandered within the state, and the remainder of the listing is taken from Iowa Administrative Code, Environmental Protection Commission [567], Chapter 74 Milldams and Races. Said Chapter 74 was rescinded in 1991.

1. *Mississippi river*. Full reach along state boundary.
2. *Missouri river*. Full reach along state boundary.
3. *Big Sioux river*. Full reach along state boundary.

4. *Des Moines river*. From Mississippi river to the junction of the east and west branches. The west branch to west line T95N, R32W, Palo Alto county, due south of Emmetsburg. The east branch to north line T95N, R29W, Kossuth county, near the north edge of Algona.
5. *Iowa river*. From Mississippi river to west line T81N, R11W, Iowa county, due north of Ladora.
6. *Cedar river*. From Iowa river to west line T89N, R13W, Black Hawk county, at the east edge of Cedar Falls.
7. *Raccoon river*. From Des Moines river to west line of Polk county.
8. *Wapsipinicon river*. From Mississippi river to west line T86N, R6W, Linn county, northwest of Central City.
9. *Maquoketa river*. From Mississippi river to west line T84N, R3E, Jackson county, due north of Maquoketa.
10. *Skunk river*. From Mississippi river to north line of Jefferson county, at the southwest edge of Coppock.
11. *Turkey river*. From Mississippi river to west line T95N, R7W, Fayette county, northwest of Clermont.
12. *Nishnabotna river*. From Missouri river to north line T67N, R42W, Fremont county, northeast of Hamburg.
13. *Upper Iowa river*. From Mississippi river to west line Section 28, T100N, R4W, Allamakee county, about two and one-half miles upstream from its mouth.
14. *Little Maquoketa river*. From Mississippi river to west line Section 35, T90N, R2E, Dubuque county, about one mile upstream from its mouth.

Established Road Widths

Many of the early roads in Iowa were designated territorial or state roads, established by legislative act of the territorial session or the state general assembly. Counties were also impowered to lay out, discontinue or alter roads within their respective counties. No matter their designation, however, the expense of opening and maintaining early Iowa roads was the responsibility of the county in which they were located, and necessarily, the county government became the custodian of early road records. The first Iowa territorial session placed county government under the supervision of a three person board of county commissioners. The duties of the county commissioners were transferred to a county judge in 1851 but transferred again from the county judge to a county board of supervisors in 1860. The clerk of district court was assigned the duty of clerk of the board of supervisors. The office of the county auditor was created in 1868 and assumed the duty of clerk of the board of supervisors.

The public road system became more complex with time. The state motor vehicle road fund was established in 1904, and was channeled toward road construction and maintenance in 1911. Federal funds were accepted for use within the public road system in 1917. The division of the public roads into primary and secondary systems occurred in 1918. The state highway commission, created at Iowa State College in 1904, to assist the counties in following good highway construction and maintenance practices, gradually took on additional administrative duties in coordinating such good practice, including the disbursement of federal and state funds to counties. The powers and duties of the boards of supervisors with respect to the construction and maintenance of primary roads were transferred to the state highway commission in 1927.

1838 Territory of Iowa established by Act of Congress effective July 4, 1838. First session of legislative assembly of the Territory of Iowa established the width of territorial roads at seventy feet (Section 6, Chapter 123, approved December 29, 1838).

1843 Chapter 125 of the Territory of Iowa law, approved February 1, 1843, set a sixty feet width for county roads. The width of the territorial roads remained at seventy feet.

1851 Section 515, Code of Iowa, 1851, approved December 5, 1851, provided: "County and state roads hereafter established must be sixty-six feet in width, unless otherwise specifically directed, but the court may for good reasons fix a different width not less than thirty-three feet." The word "court" refers to a county court as at that time the county court was assigned the general supervision over the highways in the county.

1873 Minimum statutory road width revised from 33 feet to 40 feet. Section 921, Code of Iowa, 1873, is as follows: "Highways hereafter established must be sixty-six feet in width, unless otherwise directed; but the board of supervisors may, for good reasons, fix a different width, not less than forty feet, and they may be increased or diminished within the limits aforesaid, altered in direction, or discontinued, by pursuing substantially the steps herein prescribed for opening a new highway."

1951 The Fifty-fourth General Assembly, Section 1, Chapter 103, approved April 26, 1951, repealed the sixty-six feet and minimum road width requirements. Prior to this the Iowa Supreme Court had often ruled "It is unnecessary , in the establishment of a road under our law, to recite the width of the road, for the reason that the width of the road is determined by statute, unless otherwise fixed by the establishing body." *Dickson v.*

Davis County, 201 Iowa 741 (1925) is one of several cases making this point.

1983 Section 471.4(2), Code of Iowa, 1983, allows owners of land without a way to it to condemn a public way, not exceeding forty feet in width. This element of Iowa law may be traced back to the Twenty-fifth General Assembly in 1894. A similar element appeared in the Iowa law following the Fifteenth General Assembly in 1874 and up to 1894, except that it applied to lands having stone and minerals thereon and the stated width was fifty feet. The application of this law is probably rare.

1992 The Seventy-fourth General Assembly amended Section 306.3 of the Iowa Code during their 1992 session by adding: "12 Public road right-of-way" means the area of land, the right to possession of which is secured or reserved by a government subdivision for roadway purposes. The right-of-way for all secondary roads is sixty-six feet in width, unless otherwise specified by the county board of supervisors of the respective counties." This definition was renumbered "7" in 1998.

County roads in Iowa have thus predominantly been established by easement on section lines at a sixty-six foot width but exceptions can occur.

Standard establishment of county roads required the board of supervisors to appoint a commissioner to survey the location of the road. Section 553 of the Code of Iowa , 1851, allowed "roads may be established without the appointment of a commissioner, provided the written consent of all the proprietors of the land to be used for that purpose be first filed and recorded." Roads established this way were called "consent highways," an element of Iowa law which was also repealed in 1951.

County Surveyor

Iowa established the required elected office of county surveyor as part of the first session of the legislative assembly of the Territory of Iowa in 1838. It became optional for the board of supervisors to hire someone to fill this position in 1911 and the office has gradually disappeared from the state.

Iowa Geodetic Survey

An Iowa Geodetic Survey (IGS) existed from the mid 1930s to the early 1940s. Professor John S. Dodds, Iowa State College, was its State Director, and its operations appear to have been primarily financed by the Works Progress Administration (WPA), an economic recovery program of the time. The IGS carried out section corner recovery work in a number of Iowa counties and these field books may sometimes be found in the respective county records. The IGS also traversed between section corners but were unable to complete most of the traversing work before passing out of existence. Some geodetic leveling was performed by the IGS and some of their points with an IGS identifier were incorporated into the national network. Another Iowa WPA project, probably not part of the IGS, in the late 1930s transcribed most of the state's original handwritten government survey field notes into typewritten form.

Records Research for Land Surveying in Iowa

This abstract is intended to be a general guide for researching records to perform land surveys in Iowa. This information can vary as to completeness and locations of the records.

County Recorder Office: Deeds, contracts for deed, plats of survey, plats for subdivisions, acquisition plats, section corner certificates, miscellaneous surveys, fence viewer orders, fence agreements, affidavits explanatory of title, condemnation records, county surveyor records, copies of original government plats, copies of original entries, annexation records, railroad land grants.

County Auditor Office: Ownership plats, real estate transfers, road establishment records, drainage district data, railroad strip maps, county supervisor minutes, county surveyor records, copies of original government plats, county subdivision regulations, flood zone maps.

County Engineer Office: Section corner ties, section corner certificates, Iowa Geodetic Survey corner recovery records, preliminary road surveys, road plans, right-of-way maps, copies of original government plats, county surveyor records, road establishment and vacation records, aerial photographs, county resurvey records, road maps, county maps, drainage district data, railroad strip maps, county GPS control, flood zone maps.

Clerk of District Court Office: Court degrees on disputed corners and boundaries, condemnation proceedings, names changes, probate proceedings.

City Engineer Office: Street records, property corner ties, subdivision plats, city maps, miscellaneous improvement plans, elevation datums.

City Clerk Office: Subdivision regulations, zoning requirements, public utility easements, street records, subdivision plats, corporate limits, annexation plats and descriptions, flood zone maps.

Iowa Department of Transportation District Office: Right-of way plats, section corner ties, road plans, acquisition plats, right-of-way strip maps.

Natural Resources Conservation Service Office: Aerial photographs, wetland delineation maps.

State Archivist Office: Original government plats and field notes and copies thereof. (Note: Iowa Code Section 9G.8 designates the responsibility of keeping

these records to the Secretary of State but the actual keeping of these records has been transferred to the state archivist office.)

Corps of Engineers: Stream channel meander lines, levee surveys, flood zone maps, government land boundary plats and descriptions, aerial photographs.

Local Abstract Office: Almost anything in the public record relating to chain of title on specific local real estate.

Local Land Surveyor Office: Personal knowledge of local survey conditions.